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AMPHIBIA OF EAST GIPPSLAND

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Abstract

Nineteen taxa (17 species and two subspecies) of anuran amphibians are recorded from E. Gippsland. The fauna is considered to be predominantly Bassian with cool and warm temperate forms being about equally represented. Distributional data, field observations and general references are provided for each taxon.

Introduction

Moore (1961) and Littlejohn (1967) have discussed the zoogeography of S.E. Australian amphibians in general terms, but the aim of this present paper is to provide a more detailed account, consistent with that of Littlejohn and Martin (1965) for the Bass Strait islands and Littlejohn (1966) for the Victorian Mallee. For present purposes E. Gippsland is defined as that area of Victoria E. of the 148th meridian, and S. of the Continental Divide from that meridian to the border of Victoria and New South Wales.

As indicated by Rawlinson (1966, 1967, and this volume), E. Gippsland falls within the Bassian zoogeographic sub-region and its reptile fauna is largely Bassian. Thus, when examining the amphibians of this area, one may ask whether this fauna is also of a largely Bassian nature.

All specimens examined are contained in the Research Collection, Department of Zoology, University of Melbourne. Mating calls are, in most cases, excellent indicators of species identity and data on these were obtained from road logs of breeding choruses. Only localities additional to those where specimens were obtained are listed in the voice records for each taxon. Where specimens or voice records were obtained from two or more localities within 5 miles radius of a town they have generally been included under the one locality and the term 'area' added. Only specimens and field observations from within the defined area are listed, but literature references apply to a taxon in general. It should be noted that data on calling seasons may be incomplete as no field trips were made into the area in June, July, September and October.

HYLIDAE

Hyla aurea (Lesson)

SPECIMENS: Goongerrah; 11 miles E. of Orbost; Nowa Nowa.

VOICE RECORDS: 8 miles E. of Bendoc; Fairhaven, Mallacoota Inlet; 1 mile N. of Marlo.

LITERATURE RECORDS: Genoa, Gipsy Point, Orbost, Nowa Nowa, 6 miles N. of Lakes Entrance, Corringle Beach (Littlejohn, Martin and Rawlinson 1963).

REMARKS: This species has been heard calling in December and January while floating in open water in dams and swamps. The specimens may be assigned to the subspecies *H. aurea aurea* with the exception of a series from Orbost in which there are indications of *raniformis* characteristics. The situation can be clarified only by further field investigations and analysis. A general account of the complex has been given by Moore (1961) and geographic distribution figured by Littlejohn (1967).

Hyla ewingi Duméril and Bibron

Specimens: 6 miles SW. of Bendoc; 5 miles SW. of Goongerrah; 2 miles NE. of Sardine Creek; 7 and 8 miles SW. of Buchan; Genoa; 2 miles N. of Cann River; 6 miles NW. of Orbost; 6 miles N. of Nowa Nowa; Nowa Nowa area; 2 miles N. of Mallacoota; Bemm River.

Voice Records: Sardine Creek; 12 miles N. of Cann River; 15 miles NE. of Orbost; 10 and 12 miles E. of Orbost; Bellbird Creek; Cabbage Tree; 12 miles W. of Orbost.

Literature Records: These are not cited since in most earlier works no clear distinction was made between *H. ewingi* and *H. verreauxi*.

Remarks: Calls of this species have been heard in February, August, November and December. Males call from emergent or marginal vegetation, at the edges of temporary or permanent ponds, or while floating and supported by emergent vegetation. General references to this species are given by Littlejohn (1966). Martin (1967a) has discussed some aspects of larval ecology.

Hyla jervisiensis Duméril and Bibron

Specimens: The Gap, 6 miles SSE. of Bonang.

Voice Records: None.

Literature Records: Club Terrace By-pass about 12 miles W. of Cann River, Bellbird Creek (Littlejohn, Martin and Rawlinson 1963); 12 miles W. of Cann River, 15 miles N. of Orbost (Martin and Littlejohn 1966).

Remarks: A general account of the morphology, breeding biology, development and distribution of this species is given by Martin and Littlejohn (1966).

Hyla lesueuri Duméril and Bibron

Specimens: Willis; Suggan Buggan; Little River Bridge and McKillop's Bridge on the Wulgulmerang to Bonang Road; Goongerrah; Weeragua area; 3 miles N. of Sardine Creek; Genoa area.

Voice Record: 6 miles SW. of Goongerrah.

Literature Records: Honeysuckle Track near Gelantipy (Brazenor 1947); 22 miles N. of Cann River (Copland 1957).

Remarks: The soft, trilled mating calls of this species have been heard in November and December. Males call from banks and boulders along shallow, rocky streams. General accounts of this species are provided by Moore (1961) and Martin, Littlejohn and Rawlinson (1966). Larval adaptation and ecology are briefly discussed by Martin (1967a).

Hyla peroni (Tschudi)

Specimens: Fairhaven on Mallacoota Inlet.

Voice Records: Nowa Nowa area; 3 miles E. of Brodribb River; 3 miles E. of Lakes Entrance; 6 miles NE. of Lakes Entrance.

Literature Records: Genoa, Gipsy Point, Orbost, 8 miles E. of Lakes Entrance, Marlo (Littlejohn, Martin and Rawlinson 1963).

Remarks: This species has been heard calling from early November to mid-January. Males usually call from elevated positions in the marginal and emergent vegetation of fairly permanent ponds and swamps. The call may be described as a loud, chuckling trill. Moore (1961) has given a general account of this species, and Littlejohn (1967) has briefly discussed its geographical distribution.

Hyla phyllochroa Günther

SPECIMENS: 7 and 9 miles N. of Chandlers Creek; 1 mile N. of Goongerrah; 5 miles SW. of Sardine Creek; 10 miles ENE. of Bellbird Creek; Brodribb River.

VOICE RECORDS: 2 miles NE. of Bonang; 6 miles SW. of Goongerrah; 16 miles E. of Cann River.

LITERATURE RECORDS: 17 miles N. of Cann River, 26 miles N. of Orbost, Genoa, Cabbage Tree Creek (Littlejohn, Martin and Rawlinson 1963).

REMARKS: *Hyla phyllochroa* has been heard calling from November to March along the banks of small streams. The E. Gippsland populations belong to Form A of Littlejohn (1967) which is characterized by having a mating call consisting of one or two long introductory notes followed by a series of shorter notes. Moore (1961) has reviewed the available information on this species, and Copland (1962) recorded it from Victoria for the first time.

Hyla verreauxi Duméril

SPECIMENS: Between the Cobberas; 8 miles SE. of Limestone Creek on the Black Mountain Track; 1 mile N. of Native Dog Plain (about 3 miles SW. of Mt. Cobberas); top of Little River Gorge; Wulgulmerang; 3 miles N. of Gelantipy; 6 miles SW. of Bendoc; 10 miles NE. of Genoa; Genoa; 8 miles SSW. of Buchan; 2 miles N. of Cann River.

VOICE RECORDS: Bonang; 5 miles N. of Chandlers Creek; Goongerrah; 7 miles E. of Cann River; 11 miles WSW. of Genoa; Nowa Nowa; 12 miles WSW. of Orbost; 11 miles E. of Orbost.

LITERATURE RECORDS: These cannot be used since in most earlier works no distinction was made between *H. verreauxi* and *H. ewingi*.

REMARKS: This species has been heard calling in August and from November to February at the borders of temporary pools, swamps and dams. Litlejohn (1963, 1965) has described adult morphology, distribution and mating call structure of this species. Martin (1965) has commented on the similarity of the larvae of *H. verreauxi* and *H. ewingi*. The specimens from the Mt. Cobberas area may be assigned to the subspecies *H. verreauxi alpina* Fry (see comment by Littlejohn, 1967, p. 155).

LEPTODACTYLIDAE

Crinia haswelli Fletcher

SPECIMENS: Genoa; 15 miles NE. of Orbost; 3 miles SW. of Nowa Nowa.

VOICE RECORDS: Stony Creek, 6 miles NW. of Nowa Nowa; 11 miles E. of Orbost; 12 miles WSW. of Orbost; 6 miles NW. of Bemm River.

LITERATURE RECORDS: 5 miles E. of Cann River (Moore 1961); 8 miles NE. of Genoa, 8 miles E. of Genoa, 2 miles NW. of Mallacoota, Cann River, 8 miles S. of Buchan, 6 miles N. of Nowa Nowa, Cabbage Tree, Bemm River, Corringle Beach, Marlo (Littlejohn, Martin and Rawlinson 1963).

REMARKS: The mating call of this species may be described as a short, bell-like 'ank'. Males have been heard calling in August and from November to March from the banks of, or while floating in, temporary or permanent ponds, dams and swamps. Two mated pairs (inguinal amplexus) were seen floating in a small pond during early March. Moore (1961) has given a general account of this species and Martin (1967b) has briefly described and figured the larva.

Crinia signifera Girard

SPECIMENS: 30 miles E. of Benambra on Mt. Cobberas track; Mt. Cobberas; Nunyong Tableland; Wulgulmerang; 1 mile N. of Goongerrah; Weeragua area; 8 miles NW. of Genoa; 8 miles NE. of Genoa; Buchan area; 7 and 8 miles SSW. of Buchan; 12 miles W. of Cann River; 4 miles N. of Nowa Nowa; 2 miles S. of Cabbage Tree; Bemm River.

VOICE RECORDS: 6 and 8 miles E. of Bendoc; Bonang area; 10 miles N. of Chandlers Creek; Goongerrah area; Chandlers Creek area; Sardine Creek; Genoa area; Gipsy Point; Mallacoota area; 15 miles NE. of Orbost; 2 miles N. of Cann River; 6 miles N. of Nowa Nowa; 12 miles E. of Bruthen; Nowa Nowa area; Orbost area; 12 miles E. of Orbost; 12 miles WSW. of Orbost; Cabbage Tree area; 2 miles W. of Bellbird Creek; 6 miles NW. of Bemm River; Corringle Beach; Marlo; Lakes Entrance area.

LITERATURE RECORDS: Little River between Buchan and New South Wales border (Brazenor 1947); Youngs Creek, 9 miles N. of Orbost (Moore 1961).

REMARKS: This common species has been heard calling from November to March and in May and August. Most lentic sites (temporary and permanent) are utilized for breeding and males usually call from sheltered positions at the edges of the breeding sites. Litlejohn (1966) has listed recent references to this species. Martin (1967b) refers to some aspects of larval ecology.

Crinia victoriana Boulenger

SPECIMENS: 6 miles SW. of Bendoc; 1 mile N. of Goongerrah; Genoa.

VOICE RECORDS: 6 miles S. of Bonang; 4 miles N. of Goongerrah; Cann River area; 7 miles E. of Cann River; 14 miles E. of Orbost.

LITERATURE RECORDS: Bonang, 3 miles S. of Bonang, Gelantipy, 13 miles N. of Buchan, 3 miles S. of Buchan, Cann River, 12 miles N. of Nowa Nowa, 6 miles N. of Nowa Nowa, Cabbage Tree Creek (Littlejohn and Martin 1964).

REMARKS: Mating calls of *Crinia victoriana* have been heard in February and March. Littlejohn and Martin (1964) provide a detailed account of the general biology, morphology and distribution of this species.

Heleioporus australiacus Shaw

SPECIMENS: None.

VOICE RECORDS: None.

LITERATURE RECORD: 200 and 300 yards S. of the Victoria-New South Wales border (about 29 miles N. of Cann River) (Littlejohn and Martin 1967).

REMARKS: The available information on this striking, but rather secretive, species has been summarized by Littlejohn and Martin (1967).

Limnodynastes dorsalis (Gray)

SPECIMENS: Nunyong Tableland, 28 miles NE. of Ensay; 10 miles NE. of Genoa; Fairhaven, Mallacoota Inlet; 6 miles S. of Buchan; Cann River area; 15 miles NE. of Orbost; 6 miles N. of Nowa Nowa; 6 miles NW. of Orbost; Nowa Nowa; Orbost; 10 and 11 miles E. of Orbost; Bemm River area; 6 miles N. of Lakes Entrance; 5 miles E. of Lakes Entrance.

VOICE RECORDS: 6 and 8 miles E. of Bendoc; Bonang area; Goongerrah; 6 miles N. of Chandlers Creek; 3 miles S. of Buchan; 1 mile S. of Genoa; Gipsy Point; Mallacoota area; Bete Bolong; 12 miles WSW. of Orbost; Corringle Beach area; 4 miles NE. of Lakes Entrance; 6 miles E. of Lakes Entrance.

LITERATURE RECORDS: Little River (Brazenor 1947); 5 miles E. of Cann River (Moore 1961).

REMARKS: This species has been heard calling in August and from November to March. Numerous egg masses were seen in early March, 1961, following very heavy rains. Males usually call while floating, concealed by overhanging and emergent vegetation, and a wide range of temporary and permanent still water habitats is utilized for breeding. The material may be assigned to the subspecies *insularis* Parker with the exception of the specimen from the Nunyong Tableland which is of the subspecies *dumerili* Peters (A. A. Martin, pers. comm.). Littlejohn (1966) has provided general references to the species and geographic distributions of the subspecies is figured by Littlejohn (1967). Martin (1967a) has discussed oviposition patterns within the *L. dorsalis* complex.

Limnodynastes peroni (Duméril and Bibron)

SPECIMENS: 10 miles N. of Chandlers Creek; 7 miles S. of Gelantipy; Goongerrah; 7 miles S. of Buchan; Club Terrace By-pass; 2 miles N. of Cann River; Nowa Nowa; Bemm River; 6 miles N. of Lakes Entrance.

VOICE RECORDS: 6 and 8 miles E. of Bendoc; Bonang; 10 miles N. of Chandlers Creek; Chandlers Creek area; 6 miles SW. of Goongerrah; 10 miles NE. of Genoa; 3 and 4 miles E. of Genoa; Gipsy Point; 5 miles SW. of Sardine Creek; 15 and 16 miles NE. of Orbost; 12 miles E. of Bruthen; 3 miles E. of Brodribb River; Lakes Entrance area.

LITERATURE RECORDS: None.

REMARKS: Mating calls of this species have been heard from November to March. Males call from concealed sites while floating in fairly permanent still water. General accounts have been given by Moore (1961) and Littlejohn (1963). The larva has been described by Martin (1965) and some aspects of oviposition are discussed by Martin (1967a).

Limnodynastes tasmaniensis Günther

SPECIMENS: Wulgulmerang.

VOICE RECORDS: 6 and 8 miles E. of Bendoc; 1 mile S. of Bonang; Lakes Entrance area.

LITERATURE RECORDS: None.

REMARKS: Calls were heard in March, November and December and were all of the Southern Call Race (*sensu* Littlejohn, 1966). Males of this species call while floating in open positions in temporary and permanent still-water habitats. *L. tasmaniensis* appears to be restricted to the extreme northern and western borders of E. Gippsland (see distribution map in Littlejohn, 1967). Other recent references are given by Littlejohn (1966).

Mixophyes fasciolatus Günther

SPECIMENS: 10 miles N. of Chandlers Creek (just S. of the border between Victoria and New South Wales).

VOICE RECORDS: None.

LITERATURE RECORDS: None.

REMARKS: This species is recorded from Victoria for the first time. The specimens were collected on the evening of 6:XII:65 and were calling from the banks and boulders along a shallow rocky stream. The mating call is a short grating trill (Form B of Littlejohn, 1967). Moore (1961) has provided a general account of the species complex, and Martin (1967a) has described some aspects of larval morphology and ecology.

Pseudophryne dendyi Lucas

SPECIMENS: Mt. Cobberas area; Limestone Creek, 25 miles E. of Benambra; Willis; Nunyong Tableland, 28 miles NE. of Ensay; Wulgulmerang area; 6 miles SW. of Bendoc; 2 miles S. of Bonang; 8 miles S. of Gelantipy; 13 miles N. of Buchan; 1 mile N. of Weeragua; 12 miles N. of Cann River; 3 miles S. of Buchan; 7 and 8 miles S. of Buchan; 2 miles W. of Club Terrace; Cann River area; 10 miles W. of Genoa; 2 miles N. of Mallacoota.

VOICE RECORDS: Little River Bridge area, Wulgulmerang-Bonang Road.

LITERATURE RECORDS: Honeysuckle Track, near Gelantipy (Brazenor, 1947, as *P. bibroni*); Bonang and 15 miles N. of Orbost (Moore 1961).

REMARKS: This species has been heard calling from mid-February to late April. An amplexed pair was taken on 20:II:63 and eggs were seen on 16:IV:65. Males call from shallow burrows in low, swampy areas which will later flood with winter rains. Eggs are laid in these burrows and initial development is terrestrial. A general account of the species is given by Moore (1961) and a distribution map is figured by Littlejohn (1967). The mating call is similar to that of *P. semimarmorata* and may be described as a short, grating 'ark'.

Pseudophryne semimarmorata Lucas

SPECIMENS: Bete Bolong; 1 mile S. of Newmerella; 4 miles SW. of Nowa Nowa; 5 miles E. of Lakes Entrance; 1 mile N. of Corringle Beach; Marlo.

VOICE RECORDS: None.

LITERATURE RECORDS: None.

REMARKS: This species has similar breeding habits to those of *P. dendyi* and has been heard calling in March and May. Specimens from 1 and 6 miles N. of Nowa Nowa appear to be intermediate between *P. dendyi* and *P. semimarmorata* and indicative of limited hybridization. Littlejohn (1963) has given a brief general account of the species; Martin (1965; 1967a) has described and figured the larva. Littlejohn (1967) has presented a map of distribution and commented on the hybridization between the taxa.

Uperoleia marmorata Gray

SPECIMENS: 3 miles SW. of Nowa Nowa.

VOICE RECORD: 3 miles E. of Lakes Entrance.

LITERATURE RECORD: 2 miles N. of Cann River (Littlejohn, Martin and Rawlinson 1963).

REMARKS: Mating calls of this species were heard on 7:XII: 63 and the call may be described as a long, rasping 'squelch'. Males were calling from the litter at the edge of a small, fairly permanent pool. A general description of the species has been given by Moore (1961) who prefers to recognize only one species within the genus. On our present information it seems more reasonable to follow Parker (1940) and to recognize this entity as distinct from the *U. rugosa* (Andersson) complex which appears to contain at least two sibling species (Forms A and B of Littlejohn, 1967).

Discussion and Summary

Nineteen taxa (17 species and two subspecies) are known to occur in E. Gippsland (Table 1). Of these, 12 (or 63%) are probably restricted to the Bassian subregion (*sensu* Spencer 1896; see discussion by Littlejohn 1967, and Rawlinson, this volume), seven with typically southern (cool temperate) distributions and five with

TABLE 1

Zoogeographic Analysis of the Amphibian Fauna of E. Gippsland

Species	*Exclusive Bassian*		Eyrean	Uncertain
	Southern	Eastern		
HYLIDAE				
Hyla aurea		x		
H. ewingi	x			
H. jervisiensis		x		
H. lesueuri				x
H. peroni				x
H. phyllochroa				x
H. verreauxi verreauxi				x
H. v. alpina	x			
LEPTODACTYLIDAE				
Crinia haswelli		x		
C. signifera				x
C. victoriana	x			
Heleioporus australiacus		x		
Limnodynastes dorsalis dumerili			x	
L. d. insularis	x			
L. peroni				x
*L. tasmaniensis**	x			
*Mixophyes fasciolatus***		x		
Pseudophryne dendyi	x			
P. semimarmorata	x			
TOTAL	7	5	1	6

* Southern call race of Littlejohn (1966).

** Form B of Littlejohn (1967).

typically eastern (warm temperate) distributions (Table 1). Of the remainder, six are either wide-ranging through the Bassian and Torresian sub-regions, or their northern limits are not known, or they belong in sibling species complexes for which little field data are available. Accordingly, these are classed as of uncertain zoogeographic status for the present purposes (Table 1), although some may actually belong in the Eastern Bassian Component.

The last taxon to be considered, *Limnodynastes dorsalis dumerili*, ranges mainly through areas on the inland slopes of the Dividing Range and adjacent plains and may be considered as a marginal Eyrean form (i.e. typical of the Eyrean sub-region of Spencer 1896); it appears to penetrate into E. Gippsland by way of the Monaro Plains (see map in Littlejohn 1967). Two other marginal Eyrean taxa also occur in the southern Monaro area of New South Wales. We have records of *Neobatrachus pictus* Peters from 7 miles N. and 9 miles SW. of Bombala, and of *Uperoleia rugosa* (Form B of Littlejohn 1967, i.e. characterized by a long, unpulsed mating call) from two miles N. of Bombala, and from 4 miles NE. and 3 miles W. of Delegate. These two species may subsequently be found in the apparently suitable drier tract of E. Gippsland along the border between the Snowy and Cann Rivers.

In summary, we may conclude that the anuran amphibian fauna of E. Gippsland is composed largely of Bassian taxa with eastern warm temperate and southern cool temperate form[illegible] being about equally represented. Only one Eyrean taxon has been found in the defined area, and with two others which occur close by in southern New South Wales may constitute an Eyrean or Monaro intrusive component. The balance of the fauna is made up of wide-ranging forms (Bassian and Torresian), or of taxa for which more field data are required.

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